

NSS5813 Series 100G MPLS Aggregation Switch

Datasheet

Overview

NSS5813 series switch is a high-performance stackable L3 MPLS aggregation routing switch developed by Maipu. It is applied in enterprise campus network and easy to deploy Layer3 switching solution that offers enhanced security and 1G/10G/40GE/100GE uplinks, RIP/OSPF/BGP/IS-IS, L2&L3 Multicast, VST/M-LAG stacking enabled and flexible management.

NSS5813 series switch can be used as L3 aggregation devices on large-sized campus networks. They can also be used as core devices on small and medium-sized campus networks. The switches help build highly reliable enterprise campus networks that are easy to expand and manage.

NSS5813 series switch includes NSS5813-48XF8QS (V1) one model.

Model Name	Specification
 NSS5813-48XF8QS (V1)	● 48*1/10G SFP+ Optical Interfaces ● 8*40/100G QSFP28 Optical Interface ● Dual Power Slots ● Five Fan Slots ● One Multi-functional Slots ● RJ45 Console/RJ45 Management/USB2.0 Port ● Switching Capacity: 2.56Tbps

Key Features

● Intelligent Stacking Technology

The NSS5813 series switch is equipped with Maipu VST stacking function. VST (Virtual Switching Technology) stacking combines multiple switches to form a logical virtual switch via the 10G/40G/100G ports, improving device and link reliability, network expansion, and simplifying configuration and management.

The NSS5813 series switch also support M-LAG, aggregating links of multiple switches to ensure link backup and uninterrupted services during upgrade.

● Software Defined Network

The NSS5813 series switch is capable of being managed by Maipu's BD-Campus controller, an integrated SDN platform designed for campus networks. The utilization of software-defined network technologies in this platform simplifies the deployment, management, and security of campus networks, while also enabling network teams to complete the majority of their work directly on the BD-Campus controller platform. When compared with traditional methods, implementing a BD-Campus solution can significantly reduce network deployment times, simplify network maintenance, improve troubleshooting efficiency, and ultimately lead to overall cost savings for customers.

● Advanced MPLS Capabilities

The NSS5813 series switch delivers advanced MPLS capabilities, enhancing your network infrastructure with powerful features. These include seamless MPLS VPN deployment for secure and efficient data transmission, MPLS Traffic Engineering for optimized traffic routing, and MPLS Quality of Service (QoS) support for prioritizing critical applications.

● Zero Touch Provisioning

The NSS5813 series switch features advanced Zero Touch Provisioning (ZTP) capabilities, streamlining the deployment process for network administrators. With ZTP, the switch can automatically discover and load necessary version files from a file server via a DHCP server or a USB flash disk, eliminating the need for manual intervention during initial setup. This automation reduces configuration errors, accelerates the deployment process, and enhances overall network efficiency, making the NSS5813 series switch an ideal choice for scalable and dynamic network environments.

● Advanced Network Virtualization

The NSS5813 series switch excels in virtualization and congestion management, catering to contemporary network demands. Offering L2/L3 VxLAN Gateway support, it enables flexible deployment with Static, Distributed, and Centralized VxLAN Gateways. Additionally, the switch accommodates IPv4/IPv6 VxLAN Tunnels and BGP-EVPN for seamless overlay networking.

● High Availability

The NSS5813 series switch offers advanced redundancy and reliability features, catering to diverse networking requirements. In addition to supporting traditional spanning tree protocols such as STP, RSTP, and MSTP, the switch also complies with the ITU-T G.8032 international standard. This Ethernet Ring Protection Switching (ERPS) protocol enables rapid 50ms failover within Ethernet ring network topologies, ensuring seamless connectivity and minimal downtime.

Furthermore, the NSS5813 series switch incorporates the Virtual Router Redundancy Protocol (VRRP), facilitating uplink backup capabilities. By connecting to multiple aggregation switches via multiple links, the switch significantly enhances access device reliability, promoting network stability and resilience.

● Perfect Security Policy

The NSS5813 series switch offers a comprehensive suite of security features, including user authentication, port security, ACLs, loopback detection, and 802.1X authentication. It also incorporates IP Source Guard, DHCP/ND

Snooping, Host Guard, Dynamic ARP Inspection, and PPPoE+ security mechanisms. These robust security functions ensure user access and network protection.

Additionally, the switch supports MAC+IP+VLAN binding, 802.1X authentication, and countermeasures against network storm, DOS/DDOS, ARP, and protocol packet attacks. This makes the NSS5813 series ideal for large-scale, multi-service, and complex-traffic networks.

● **Advanced QoS**

The NSS5813 series switch offers sophisticated QoS capabilities for optimal network performance. Supporting eight queues per port and advanced scheduling algorithms such as SP, RR, WRR, and WDRR, the switch effectively manages traffic prioritization and resource allocation.

The switch accommodates diverse priority mapping techniques, including 802.1p, CoS, and DSCP, enabling fine-grained control over traffic classification and prioritization. With granular port traffic rate limiting and time-based controls, network administrators can regulate bandwidth usage as needed.

To optimize network performance and minimize congestion, the NSS5813 series switch employs advanced congestion management techniques, such as Tail Drop and RED packet loss algorithms. These mechanisms help maintain seamless network operation while ensuring efficient delivery of critical data.

● **IPv4&IPv6 Dual-stack Ability**

The NSS5813 series switch is built on an IPv4/IPv6 dual-stack platform, delivering hardware-based, wire-speed forwarding for both IPv4 and IPv6 traffic. The switch supports IPv4/IPv6 Layer 3 routing protocols, including RIPng, OSPFv3, BGP4+, and IS-IS for IPv6. These IPv6 capabilities enable seamless deployment on pure IPv4, pure IPv6, or dual-stack networks, facilitating a smooth transition from IPv4 to IPv6 infrastructure.

● **Rich Network Management**

The NSS5813 series switch offers a comprehensive set of management options. These options encompass network management protocols like SNMP and TR-069, configuration and control options like Netconf/Yang and CLI, monitoring and diagnostic tools such as RMON and SYSLOG. These versatile features enable network administrators to effectively manage, monitor, and maintain optimal network performance locally.

● **Free Licensing Policy**

Maipu consistently adheres to a "One-time investment" free license policy, ensuring that standard and advanced features are not differentiated across versions. This approach guarantees that customers receive new firmware updates without incurring additional charges. In comparison to other manufacturers, Maipu's free license policy safeguards both short-term and long-term user investments, providing an unparalleled value proposition.

Technical Specifications

Product Model	NSS5813-48XF8QS
Hardware Specification	
Hardware Version	V1
Physical Traffic Port	48*1G/10G SFP+ interfaces 8*40G/100G QSFP28 interfaces
Power Slot	2
Fan Slot	5
Multi-function Slot	1
Power Consumption	≤162W
Dimension (W*D*H) mm	442*420*44.2
Physical Management Port	1* RJ45 Console Port 1* DC0 Port 1* USB2.0 Port
Input Voltage	AC:100V ~ 240V/50Hz ~ 60Hz
Temperature	Work Temperature: 0°C to 50°C Storage Temperature: -40°C to 70°C
Humidity	Work Humidity:10%~90%, non-condensing Storage Humidity:5%~95%, non-condensing
Anti-Lightning	4KV
Anti-Static	6KV
MTBF	>200000 hours
Performance Parameters	
Switching Capacity	2.56Tbps
Flash	8GB
RAM	4GB
Interface Buffer Size	16M
Max MAC Address Entry	448K
Jumbo Frame	12K
Max ARP Entry	129K
Max ND Entry	129K
VLAN Entry	4K
LACP Group	256
LACP Member in Group	128
MSTP Instance	64
Max IPv4 Routing Entry	393K
Max IPv6 Routing Entry	196K
L2 Multicast Entry	8K
L3 Multicast Entry	8K

VRF Entry		8K
VRRP Group		255
Software Specification		
Interface	Basic Port Configuration	Auto MDI/MDIX, Port Type UNI/NNI, Port Speed, Port MTU, Switch Port, Port Loopback, Port Energy Control
	Logic Interface	Loopback Interface, Tunnel Interface, Null Interface, L2/L3 VLAN Interface, L3 Ethernet Interface, VxLAN Interface
	MAC Address Management	Storm Control, Flood Control, MAC Address Aging Time, Mac Address Learning on off, Mac Address Learning Limitation, Mac Address VLAN Binding, MAC Debug
VLAN	VLAN Management	VLAN, QinQ, Flexible QinQ, VLAN PVID, VLAN Tag/Untag, VLAN Trunk, MAC VLAN, Protocol VLAN, Subnet VLAN, Super VLAN, Voice VLAN, Private VLAN, Guest VLAN, VLAN Debug, GVRP, VLAN Isolation
Ring Protection	Spanning Tree Protocols	STP/RSTP/MSTP, BPDU Guard, Flap Guard, Loop Guard, Root Guard, TC Guard
	Other Ring Protocols	VIST/VIST+, G.8032(ERPSv1&v2)
Link Aggregation	LACP Configuration	LACP Link Aggregation, LACP Port Priority, LACP Load Balance, LACP Rate Monitor, LACP Debug
Error Handling	Error-disable Configuration	Error-disable Based on BPDU DAI DHCP Snooping Link Flap Loopback Detect Port Security Storm Control Transceiver Power, Error-disable Recovery
Fault Detection	Fault Detection Features	ULFD, Track, Loop-back Detection, CFM (802.1ag)
IP Services	IP Protocol	ARP, DNS, NTP Server/Client, ICMP, ECMP, GRE, IPIP, IPv6 over IPv4, ISATAP, IPv4 over IPv6, IPv6 over IPv6
	Routing Protocol	Static Routing v4/v6, RIP/RIPng, IRMP, OSPF v2/v3, BGP/BGP+, ISIS/ISIS v6, VRRP/VRRP v3, VBRP, PBR/PBR v6, IP-VRF
	DHCP Service	DHCP v4/v6 Server, DHCP v4/v6 Client, DHCP v4/v6 Relay, DHCP Snooping, DHCP Option51/82
Multicast Protocols	L2 Multicast Protocols	IGMPv1/v2/v3 Snooping, IGMP Snooping Proxy, MLD Snooping, MVR, MVP
	L3 Multicast Protocols	IGMPv1/v2/v3, PIM v4/v6-SM, PIM v4/v6-SSM, PIM-DM, PIM-SDM,
QoS	Priority Mapping	802.1P Priority, DSCP priority
	Traffic Classification	Three Color Marker, Priority Remark, Traffic Redirect, Traffic Meter, Traffic Mirror
	Traffic Control	Rate Limit, Traffic Shaping
	Scheduling Algorithm	SP, RR, WRR, WDRR, SP+WRR, SP+WDRR
	Congestion Management	Tail-drop, RED, WRED
MPLS	MPLS L3 VPN	LDP, MPLS BGP, MPLS Option-A & Option-B, Multi-VRF
	MPLS OAM	MPLS Ping/Traceroute, MPLS QoS, MPLS TE
Security	Port Security	Port Security On aging deny permit violation ACL
	Network Access Control	IP Source Guard (ISG), DHCP Snooping, ND Snooping, Host Guard

	Threat Prevention	Dynamic ARP Inspection (DAI), ARP Check, AARF ARP-Guard, ARP Speed Limit, ARP Source Suppression, PPPoE+
	Access Control List	Standard IP ACL, Extended IP ACL, Standard MAC ACL, Extended MAC ACL, Standard Hybrid ACL, Extended Hybrid ACL, Standard IPv6 ACL, Extended IPv6 ACL, Time-based ACL
	Anti-Attack	Anti-Attack Detect Drop Flood Log, URPF, White List, Black List
	AAA	AAA, Radius, TACACS+, 802.1x, Portal
High Availability	Device Virtualization	H-VST, M-VST, M-LAG
	Multi-Active Detection	MAD LACP, MAD BFD, MAD Fast-Hello
	High availability Protocols	HA, ULFD, UDLD, G.8032, ULPP, Monitor Link, Track, VRRP, VRRPv3, VBRP, EEP, BFD with Static RIP OSPF BGP ISIS, CPU protection
Configuration and Maintenance	Monitoring and Diagnostics	SPAN, RSPAN, ERSPAN, VLAN SPAN, sFlow, Telemetry, LLDP, IP-SLA
	Device Management	TR069, SNMP v1/v2/v3, MIB, RMON, SYSLOG, WEB(HTTP/HTTPS), CLI, Telnet, FTP/TFTP, Debug, Telemetry, ISSU, Hot Patch, Keepalive Gateway
	Zero Touch Provisioning	ZTP Provisioning Through DHCP Server, ZTP Provisioning Through USB Flash Disk
Network Virtualization	VxLAN/EVPN	IPv4/IPv6 VxLAN Tunnel, Distributed VxLAN Gateway, VxLAN Static Centralized Gateway, VxLAN QoS, BGP-EVPN
	Data Center Interconnect (DCI)	END-TO-END VxLAN, VLAN Hand-Off, Cross As Segment VxLAN
	Software Defined Networking (SDN)	Openflow, Netconf/Yang
IEEE Standard	IEEE 802.3z (1000 BASE-X) IEEE 802.3ab (1000 BASE-T) IEEE 802.3ae (10G BASE-X) IEEE 802.3ba (40G and 100G BASE-X) IEEE 802.3ah (Ethernet in the First Mile Operations, Administration, and Maintenance) IEEE 802.1x (Port-Based Network Access Control) IEEE 802.3ad (Link Aggregation) IEEE 802.3x (Flow Control) IEEE 802.1d (Spanning Tree Protocol) IEEE 802.1ab (Link Layer Discovery Protocol) IEEE 802.1Q (Virtual LAN) IEEE 802.1w (Rapid Spanning Tree Protocol) IEEE 802.1s (Multiple Spanning Tree Protocol) IEEE 802.1p (Class of Service Priority) IEEE 802.1ag (Connectivity Fault Management)	

Order Information

Model	Description
NSS5813 Series	
NSS5813-48XF8QS	48-Port 10G SFP+ interfaces, 8-Port 100G QSFP28 interfaces, Five Fan Slots, One Multi-function Slot, Dual Power Slots
FAN Module	
FAN-01J-01B	V1 Version: FAN-01J-01B, Modular Fan Slot, Hot-swappable, Air front in rear out
Power Module	
AD550M-HV0B	550W Power Module, AC 100V~240V, supporting hot-swap, Air front in rear out.
AOC Cables	
10G SFP+AOC Cable	
SFP-STACK-AOC50	SFP+ AOC cable, SFP+ to SFP+, 10Gbps, 5 meters length
SFP-STACK-AOC100	SFP+ AOC cable, SFP+ to SFP+, 10Gbps, 10 meters length
SFP-STACK-AOC200	SFP+ AOC cable, SFP+ to SFP+, 10Gbps, 20 meters length
40G QSFP+AOC Cable	
QSFP-STACK-AOC50	QSFP AOC cable, QSFP to QSFP, 40Gbps, 5 meters length
QSFP-STACK-AOC100	QSFP AOC cable, QSFP to QSFP, 40Gbps, 10 meters length
QSFP-STACK-AOC200	QSFP AOC cable, QSFP to QSFP, 40Gbps, 20 meters length
100G QSFP28 AOC Cable	
QSFP28-STACK-AOC100	QSFP28 AOC cable, QSFP28 to QSFP28,100G, 10 meters length
QSFP28-STACK-AOC200	QSFP28 AOC cable, QSFP28 to QSFP28,100G, 20 meters length
DAC Cables	
10G SFP+DAC Cable	
SFP-STACK-15	SFP+ DAC stacking cable, SFP+ to SFP+,10Gbps, 1.5 meters length
SFP-STACK-30	SFP+ DAC stacking cable, SFP+ to SFP+,10Gbps, 3 meters length
SFP-STACK-50	SFP+ DAC stacking cable, SFP+ to SFP+,10Gbps, 5 meters length
40G QSFP+DAC Cable	
QSFP-STACK-10	QSFP DAC stacking cable, QSFP to QSFP, 40Gbps, 1.0 meters length
QSFP-STACK-30	QSFP DAC stacking cable, QSFP to QSFP, 40Gbps, 3 meters length
QSFP-STACK-50	QSFP DAC stacking cable, QSFP to QSFP, 40Gbps, 5 meters length
100G QSFP28 DAC Cable	
QSFP28-STACK-30	QSFP28 DAC stacking cable, QSFP28 to QSFP28, 100Gbps, 3 meters length

Typical Application

● SDN Campus Network



AI Inspection



AI Troubleshooting



IP Assets Management



Network Health Assessment



BD-Campus Controller



Zero Trust



Automation



Visualization



AI Operations



Zero Touch Provisioning



Auto Service Deployment



Scheduled Upgrade & Backup



- Zero Trust Network
- Loop Prevention
- Anomaly Detection & Auto Defense



Prevent private device access



- Smart Security Group Policy
- Unified Seamless Authentication
- 802.1x/MAC/Portal/Guest

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